POSSIBILITIES FOR AUTOMATED INSPECTION OF THERMIT WELDS IN TRACK

The Director of Civil Engineering requested that a study be made of the possibility of improving the non-destructive inspection of thermit welds. This report gives details of initial studies to consolidate alternatives and determine the feasibility of further development.

Usage of the ultrasonic test procedure for thermit welds varies but collation of regional estimates show ultrasonic inspection is applied to less than 2% of the total number of new thermit welds made per year.
Although the number of weld failures is decreasing, the annual failure rate is presently about 700. Recent studies of the East Coast Main Line have shown that broken thermit welds are the greatest single cause of rail failure.

Recommendations are provided as follows:

- Further development should be carried out on the combined ultrasonic and radiographic method, in order to establish the best way of reducing the inspection time.
- Following successful completion of the development phase, a specification should be formulated for the prototype system.
- The use of the present U6 ultrasonic procedure should continue until an automatic method becomes established.

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Report Author(s): D Cook & R Purdy
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